

REMARKS

This application has been reviewed in light of the Final Office Action mailed on January 10, 2003. Claims 1-4 and 6 are pending in the application with Claims 1 and 6 being in independent form. By the present amendment, Claims 1 and 6 have been amended. No new matter or issues are believed to be introduced by the amendments.

Claims 1-4 and 6 were rejected under 35 U.S.C. §103(a) over U.S. Patent No. 5,852,646 issued to Klotz et al. on December 22, 1998 ("Klotz et al.") in view of U.S. Patent No. 6,324,254 issued to Pflaum on November 27, 2001 ("Pflaum") and U.S. Patent No. 6,266,553 issued to Fluhrer et al. on July 24, 2001 ("Fluhrer et al.").

Applicants have amended Claims 1 and 6 to better define Applicants' invention and in a manner which is believed to obviate the rejection. Specifically, Claim 1 has been amended to recite "An X-ray imaging method comprising the steps of: forming a set of 2-dimensional X-ray images of an object to be examined, for example the coronary vascular system of a patient, by means of a scan rotation of an X-ray source around said object over a run length, said X-ray images being acquired at predetermined characteristic time moments in a cardiac cycle of the object; and reconstructing a 3-dimensional volume of the imaged object, wherein the run length of the scan rotation over substantially 180° is at least 15 s and preferably about 20 s, and wherein the number of measuring points obtained in successive cardiac cycles for reconstructing the 3-dimensional volume is reduced." (Emphasis added) Similar language as that underlined for Claim 1 is recited by Claim 6.

Klotz et al., Pflaum and Fluhrer et al., taken alone or in combination, do not disclose or suggest all the limitations recited by Applicants' Claim 1. The first two

references do not disclose or suggest reducing the number of measuring points in successive cardiac cycles, as recited by Applicants' Claim 1. Accordingly, the Examiner relies on the third reference, namely, Fluhner et al., for disclosing this feature.

It is respectfully submitted that Fluhner et al. does not disclose or suggest this feature and therefore, does not cure the deficiencies of the first two references. Fluhner et al. discloses obtaining a dataset completely within each of a number of successive time intervals then combining the datasets from the successive time intervals to produce a low-motion image of the heart. See column 1, line 64 to column 2, line 14. One cannot assume that the tomography apparatus disclosed by Fluhner et al. reduces number of measuring points obtained in successive cardiac cycles when Fluhner et al. does not explicitly disclose such a feature.

Hence, Fluhner et al. does not disclose or suggest reducing the number of measuring points obtained in successive cardiac cycles for reconstructing the 3-dimensional volume, as recited by Applicants' Claims 1 and 6. Accordingly, withdrawal of the rejection with respect to Claims 1 and 6 and allowance thereof are respectfully requested.

Claims 2-4 depend from Claim 1 and therefore include the limitations of Claim 1. Therefore, for at least the same reasons given above for Claim 1, Claims 2-4 are believed to be allowable over the cited references, taken alone or in combination. Accordingly, withdrawal of the rejection with respect to Claims 2-4 and allowance thereof are respectfully requested.

In view of the foregoing amendments and remarks, it is respectfully submitted that all claims presently pending in the application, namely, Claims 1-4 and 6, are believed to be in condition for allowance and patentably distinguishable over the art of record.

Attached hereto and identified as VERSION WITH MARKINGS TO SHOW CHANGES MADE is a copy of the amended claims detailing the amendments made thereto.

If the Examiner should have any questions concerning this communication or feels that an interview would be helpful, the Examiner is requested to call John Vodopia, Esq., Intellectual Property Counsel, Philips Electronics North America, at 914-333-9627.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

1. (Twice Amended) An X-ray imaging method comprising the steps of:
forming a set of 2-dimensional X-ray images of an object to be examined, for example the coronary vascular system of a patient, by means of a scan rotation of an X-ray source around said object over a run length, said X-ray images being acquired at predetermined characteristic time moments in a cardiac cycle of the object; and
reconstructing a 3-dimensional volume of the imaged object, wherein the run length of the scan rotation over substantially 180° is at least 15 s and preferably about 20 s, and wherein [reducing] the number of measuring points obtained in successive cardiac cycles for reconstructing the 3-dimensional volume is reduced.
6. (Twice Amended) 3D-rotational X-ray apparatus for applying the method according to claim 1, comprising a circular C-arm with a drive, the C-arm accommodating an X-ray source and an X-ray image pick-up device and being rotatable over an angle of substantially 180° around its center by means of said drive, triggering means for triggering the X-ray images at predetermined characteristic time moments in a cardiac cycle of the object, wherein the number of measuring points obtained in successive cardiac cycles is reduced, and means for processing the images obtained to reconstruct a 3-dimensional volume of the object, wherein the drive of the C-arm is adjusted to a run length of a scan rotation over substantially 180° which is at least 15 s and preferably about 20 s.

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